Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Sepsis: median time to initiation of Vancomycin (or Linezolid) following severe sepsis/septic shock identification.

Source(s)

VHA, Inc. Transformation of the intensive care unit: sepsis data collection toolkit. Irving (TX): VHA, Inc.; 2007 Jan 1. 29 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the median time to initiation of Vancomycin (or Linezolid) following severe sepsis/septic shock identification.

Rationale

Studies show that annually there are between 500,000 to one million cases of sepsis and severe sepsis in American hospitals. The annual mortality rate for these cases is between 15 and 30 percent or as many as 200,000 deaths. Many more patients suffer from permanent organ damage. The cost to society in dollars spent and lives lost prematurely is enormous. While there are many useful clinical interventions, research shows that they are applied inconsistently, if at all.

There is emerging evidence that the sickest patients should be treated with broad-spectrum antibiotics as soon as possible. This approach contrasts with treatment for less sick patients where, in general, we start with a narrow-spectrum antibiotic and broaden antibiotics if the patient does not respond.

With critically ill patients (those with severe sepsis or septic shock), clinicians cannot afford to under treat. Evidence suggests that the initial use of inadequate antibiotics nearly doubles the patients' mortality. As a result, the approach to antibiotic management in patients with severe sepsis or septic shock should be to start broad as soon as possible until culture results are available and the regimen can be narrowed.

Just what constitutes adequate broad-spectrum antibiotic coverage is an ongoing controversy. Because pseudomonas is a common pathogen, the initial antibiotic therapy should include a medication against pseudomonas. Increasingly, methicillin-resistant staph aureus (MRSA) is a cause of infection and one of the most common reasons for inadequate antibiotic therapy. In addition, a recent study suggests that 12 percent of MRSA infections were community-acquired and these patients lacked established risk factors. Because our ability to predict who is at risk for pseudomonas and MRSA is imprecise and because a patient's mortality nearly doubles if infections with these organisms go untreated with the initial antibiotics, we recommend that unless the clinician is confident that the probability of pseudomonas or MRSA is zero, an antibiotic to treat pseudomonas and MRSA should be included in the initial antibiotic therapy for critically ill patients.

The potential downside of this strategy is enhanced antibiotic resistance. Though the data is limited, most experts believe that four days of antibiotics is unlikely to cause resistance. Resistance ensues when the drugs are continued for long periods of time. Among critically ill patients, the risk-benefit ratio thus strongly favors starting broad-spectrum antibiotics that includes anti-pseudomonal and MRSA drugs. These antibiotics should be discontinued if not needed when culture results are available.

Evidence for Rationale

Martin GS, Mannino DM, Eaton S, Moss M. The epidemiology of sepsis in the United States from 1979 through 2000. N Engl J Med. 2003 Apr 17;348(16):1546-54. PubMed

Naimi TS, LeDell KH, Como-Sabetti K, Borchardt SM, Boxrud DJ, Etienne J, Johnson SK, Vandenesch F, Fridkin S, O'Boyle C, Danila RN, Lynfield R. Comparison of community- and health care-associated methicillin-resistant Staphylococcus aureus infection. JAMA. 2003 Dec 10;290(22):2976-84. PubMed

VHA, Inc. Improving sepsis care in the intensive care unit: an evidence-based approach. Irving (TX): VHA, Inc.; 2004. 60 p.

Primary Health Components

Severe sepsis; septic shock; Vancomycin (or Linezolid); median time to initiation

Denominator Description

Patients, 16 years of age and older, with a diagnosis of severe sepsis/septic shock (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Continuous variable statement: Median time, in hours, from severe sepsis/septic shock identification to the initiation of Vancomycin (or Linezolid) for patients with severe sepsis/septic shock

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

A study confirmed that patients with severe sepsis consume significant resources. The average hospital length of stay was 20 days at an average cost of $22,100. National cost estimates for the care of severe sepsis based on this study is $16.7 billion dollars, with the care of patients older than 65 costing $8.7 billion (52.3 percent), and care of those older than 75 costs $5.1 billion dollars (30.8 percent). The costs for caring for patients with sepsis are projected to rise approximately 1.5 percent per year due to the aging U.S. population.

Evidence for Additional Information Supporting Need for the Measure

VHA, Inc. Improving sepsis care in the intensive care unit: an evidence-based approach. Irving (TX): VHA, Inc.; 2004. 60 p.

Extent of Measure Testing

Unspecified

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Hospital Inpatient

Intensive Care Units

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Age greater than or equal to 16 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

Unspecified

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Institutionalization

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions
Patients, 16 years of age and older, with a diagnosis of severe sepsis/septic shock

Exclusions
Any one of the following:

- Patients less than 16 years of age
- Patients with renal failure
- Not Applicable because:
  - An organism (other than methicillin-resistant Staphylococcus aureus [MRSA] or methicillin-resistant Staphylococcus epidermidis [MRSE]) responsible for sepsis has been identified
  - Patient had severe allergies to Vancomycin and Linezolid
  - Had contraindications/reasons for not receiving Vancomycin and Linezolid
  - Was diagnosed with secondary bacterial peritonitis
  - Care was withdrawn or patient expired within 24 hours following severe sepsis/septic shock identification
- "Not Administered" was selected for Vancomycin (or Linezolid) administration
- Date or Time of severe sepsis/septic shock identification unknown
- Date or Time of Vancomycin (or Linezolid) administration unknown
- If the option 'All Cases' is selected on report parameter page: Exclude Cases with a time elapsed EARLIER THAN -24 hours or GREATER THAN +72 hours
- If the option 'Only cases with Vancomycin (or Linezolid) initiated after sepsis identification' is selected on report parameter page: Exclude Cases with a time elapsed EARLIER THAN zero hours or GREATER THAN +72 hours.

Note: Refer to original measure documentation for definitions and additional details.

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions
Continuous variable statement: Median time, in hours, from severe sepsis/septic shock identification to the initiation of Vancomycin (or Linezolid) for patients with severe sepsis or septic shock

Exclusions

Unspecified

Numerator Search Strategy

Institutionalization

Data Source

Paper medical record

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Mean/Median

Interpretation of Score

Desired value is a lower score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Median time to Vancomycin (or Linezolid) initiation.

Measure Collection Name

Transformation of the Intensive Care Unit (TICU) Measures

Measure Set Name

Sepsis Quality Indicators

Submitter

Vizient, Inc. - For Profit Organization

Developer

Vizient, Inc. - For Profit Organization

Funding Source(s)

VHA, Inc.

Composition of the Group that Developed the Measure

Internal VHA, Inc. clinical subject matter experts along with external clinical subject matter faculty experts from various National and local research medical centers/hospitals

Financial Disclosures/Other Potential Conflicts of Interest

None; work was not supported by any third party vendors, contractors or for-profit health care companies including suppliers, device makers, or pharmaceutical firms.

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2007 Jan

Measure Maintenance

Unspecified

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

The measure developer reaffirmed the currency of this measure in November 2015.

Measure Availability

Source not available electronically.

For more information, contact VHA, Inc. at: 220 E. Las Colinas Blvd., Irving, TX 75039; Phone: 1-800-842-5146 or 1-972-830-0626; Web site: www.vha.com .

Companion Documents

The following is available:

VHA, Inc. Improving Sepsis Care in the Intensive Care Unit: An Evidence-Based Approach. Irving (TX): VHA, Inc.; 2004. 60 p.

For more information, contact VHA, Inc. at: 220 E. Las Colinas Blvd., Irving, TX 75039; Phone: 1-800-842-5146 or 1-972-830-0626; Web site: www.vha.com .

NQMC Status

This NQMC summary was completed by ECRI Institute on September 23, 2008. The information was verified by the measure developer on November 13, 2008.

This NQMC summary was retrofitted into the new template on May 12, 2011.

The information was reaffirmed by the measure developer on November 10, 2015.

Copyright Statement

Production

Source(s)

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